

Claims:

1. A coupled enzymatic reaction system comprising an NADH-dependent enzymatic transformation of an organic compound with an alcohol dehydrogenase and an enzymatic regeneration of the NADH with the formate dehydrogenase derived from *Candida boidinii* or mutants thereof in a two-phase solvent system, wherein an aqueous phase is in contact with a liquid organic phase.
2. Reaction system according to Claim 1, characterised in that the organic solvent employed possesses a solubility in water that is as low as possible and a solubility in respect of the organic compounds employed that is as high as possible.
3. Reaction system according to Claim 1 and/or 2, characterised in that aromatic or aliphatic hydrocarbons that are liquid under the reaction conditions, in particular those having a logP value of > 3 , are employed as organic solvent.
4. Reaction system according to Claim 1, 2 and/or 3, characterised in that the organic solvent is present in a quantity amounting to 10 - 60 vol.% in relation to the total volume.
5. Reaction system according to one or more of the preceding claims, characterised in that the organic compound is present prior to the start of the reaction in a concentration of > 25 mM per L solvent mixture, in particular > 100 mM per L solvent mixture.

6. Reaction system according to one or more of the preceding claims, characterised in that the system contains no surfactants.
- 5 7. Reaction system according to one or more of the preceding claims, characterised in that an alcohol dehydrogenase derived from *Lactobacillus kefir* is employed as enzyme for the transformation of the organic compound.
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8. Reaction system according to one or more of Claims 1 to 6, characterised in that an alcohol dehydrogenase derived from *Rhodococcus erythropolis* is employed as enzyme for the transformation of the organic compound.
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9. A device for the transformation of organic compounds, comprising a reaction system according to Claim 1.
10. A process for the enzymatic transformation of organic compounds by application of the reaction system according to Claim 1.
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11. Use of the reaction system according to Claim 1 for the enzymatic transformation of organic compounds or for the diagnosis or analysis of, preferably, alcohols.
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12. Use according to Claim 11 in a process for preparing enantiomer-enriched organic compounds, preferably alcohols.